Hypnella ambrosia (Bryopsida: Hookeriaceae), a New Species from Bolivia

Marko Lewis
Herbario Nacional de Bolivia, Casilla 10077, La Paz, Bolivia

Bruce Allen
Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

ABSTRACT. The existence of a *Hypnella* species (*Hypnella ambrosia*, sp. nov.) with short marginal leaf cells, cells with walls projecting at the upper ends, occasionally doubly serrate leaf margins, costae serrate above, and costal tips strongly projecting as spines is suggestive of a close generic relationship to *Hookeriopsis* sensu lato.

Cerro Amboró, within Amboró National Park, is an area with deep sandstone canyons lying between the high tropical Andes of the Cordillera Real, the sub-Andean ranges of Chuquisaca and Tarija, and the sandstone ranges of the Chiquitos. *Clusia* shrublands, grading into isolated grasslands, dominate the upper slopes of Cerro Amboró. The lower canyons are densely forested, and isolated riverine forests follow the deeper canyons nearly to the summit. During a botanical expedition to the summit of Cerro Amboró (September 1990), the senior author collected extensively in the upper canyon forests where an unusual species was encountered along rills and creeks from 900 to 1,250 m. The species has features found in *Hypnella*, *Hookeriopsis* sensu lato, and *Callicostella*, but the presence of pluripapillose cells indicates the first-named genus. This taxon is unlike any known species of *Hypnella*.

Hypnella ambrosia M. Lewis & B. Allen, sp. nov. TYPE: Bolivia. Santa Cruz: Prov. Ichilo, Cerro Amboró, between upper Río Isama and summit, ca. 35 km S of Buena Vista, Parque Nacional de Amboró, Cerro Amboró, 17°45′S, 63°39′W, ca. 900 m, *Lewis 37820* (holotype, LPB; isotypes, MO, NY). Figures 1–7.

Species nova *Hypnellae piliferae* proxima foliis gradatim angustatis, acuminatis, longis differt.

Plants in thin green mats, occasionally purple tinted. Stems red, 2–3 cm long, 0.1–0.15 cm wide, central strand absent, epidermal cells somewhat differentiated, thin-walled, enlarged, at times appearing as a hyaloderm, not fluted; axillary hairs 2-celled, the basal cell quadrate, red-brown, the upper cell swollen, oblong, hyaline; pseudoparaphyllia absent; paraphyllia absent; irregularly branched, branches ± parallel. Leaves complanate wet or dry, erect when dry, spreading to wide-spreading when wet, lanceolate to oblong-lanceolate, gradually narrowed to long, slender, flexuose acumina, 1.0–1.8 mm × 0.15–0.30 mm, margins weakly serrate at middle, strongly serrate at apex, teeth mostly single, occasionally double, each tooth often ending in a papilla; costae double, ± parallel, projecting as 1–2-celled spines near the base of the acumen, with multicelled serrations along the upper margins, serrations often ending in 1 or 2 papillae, in cross section rounded, with 3–4 layers of homogeneous, uniformly thick-walled cells; leaf cells thin-walled throughout, at insertion reddish or hyaline, rectangular, 30–40 μm × 6–8 μm, basal cells long rectangular, 25–47 μm × 5–6 μm, upper cells elongate fusiform to vermicular, 23–53 μm × 6–8 μm, upper marginal cells somewhat wider and shorter than laminal cells, cells with single papillae variously placed over the surface and often projecting at the upper cell ends, or 2–4 papillae scattered, at times in irregular horizontal rows, over the surface of the cell lumina. Sporophytes unknown.

Paratypes. BOLIVIA. SANTA CRUZ: Prov. Ichilo, Cerro Amboró, ca. 35 km S of Buena Vista in Parque Nacional de Amboró, 17°45′S, 63°39′W, *Lewis 37823*, *37859*, *37860* (all LPB, MO).

Hypnella ambrosia is common on the banks of creeks and rills in the upper canyons of Cerro Amboró between 900 and 1,250 m. It appears to be semi-aquatic and is especially abundant in areas near creek high-water levels and seepy zones near springs and rills. It grows on soil and bare rock. Its soft, pale green, occasionally red-tinted, flattened mats make it a distinctive element of the upper canyon forests of Amboró.

Hypnella ambrosia is similar to *Callicostella* in having some cells with single papillae; however, its


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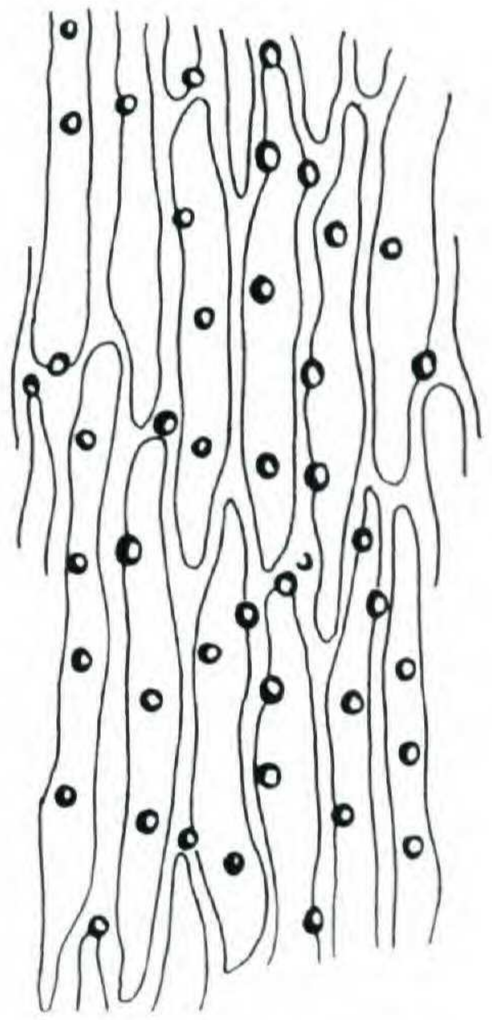
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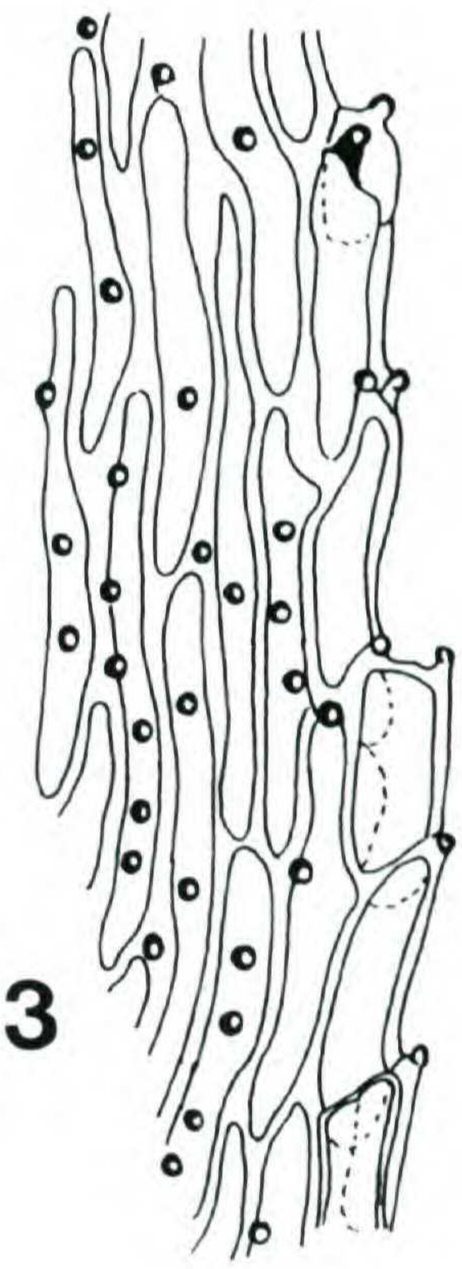
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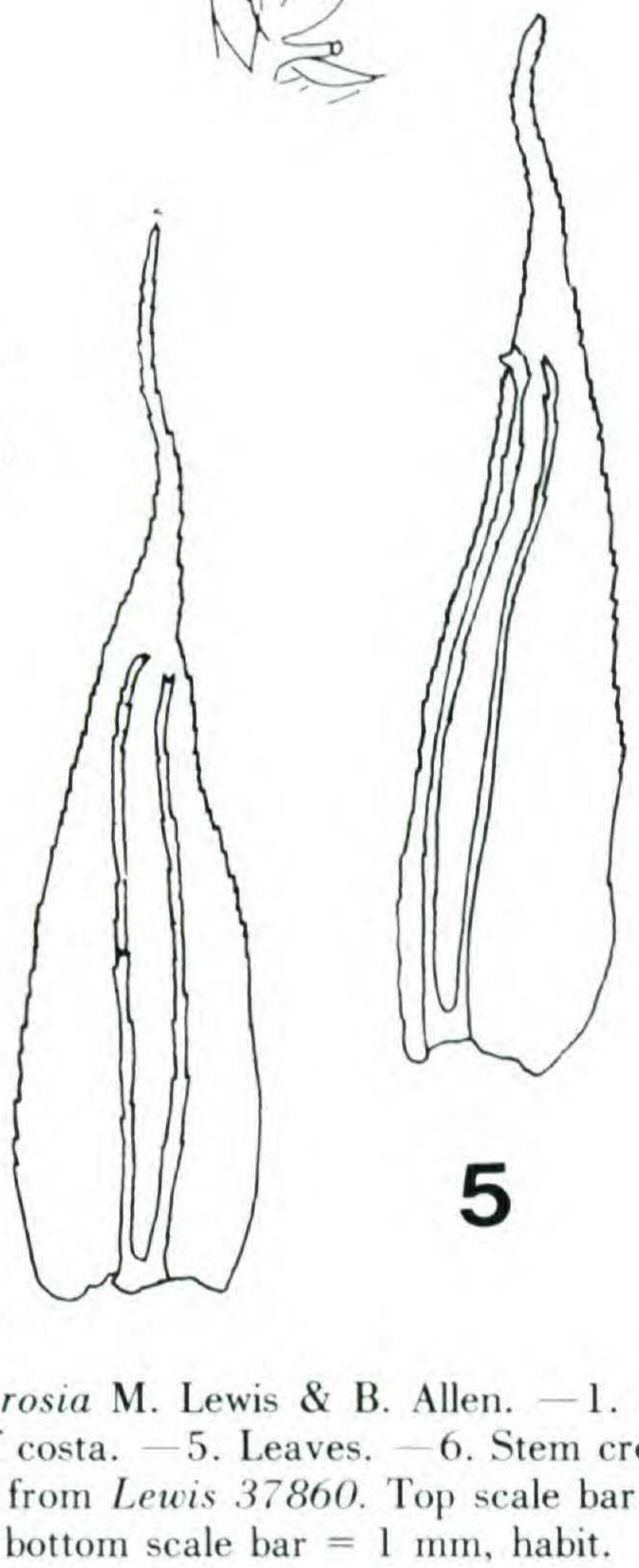
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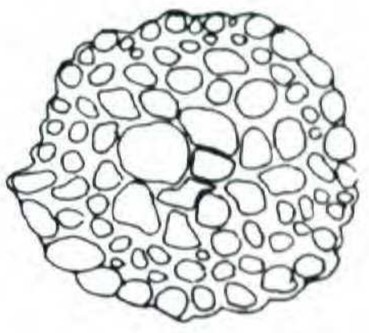
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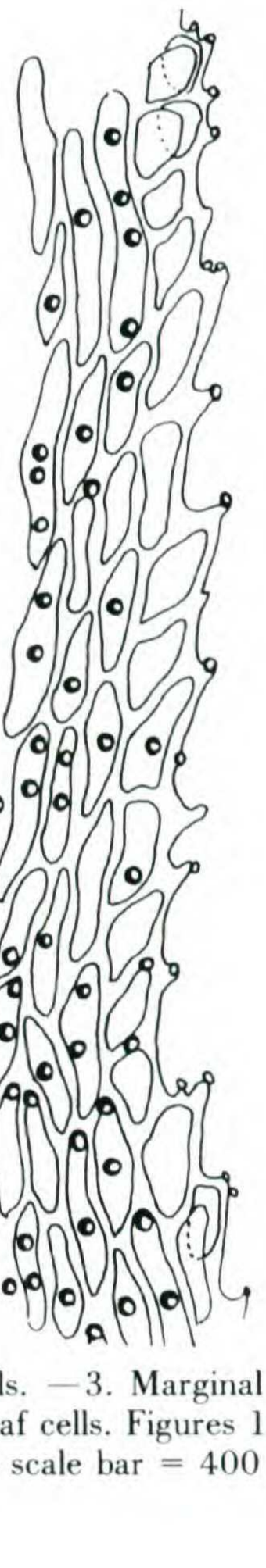
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Figures 1–7. *Hypnella ambrosia* M. Lewis & B. Allen. —1. Habit. —2. Median leaf cells. —3. Marginal leaf cells below apex. —4. Apex of costa. —5. Leaves. —6. Stem cross section. —7. Marginal leaf cells. Figures 1, 4–7 from holotype; Figures 2, 3 from *Lewis 37860*. Top scale bar = 40 μm, leaf cells; middle scale bar = 400 μm, leaves and stem cross section; bottom scale bar = 1 mm, habit.

long, vermicular, frequently pluripapillose leaf cells remove it from that genus. Long leaf cells (occasionally with projecting end-walls), short, broad, double-toothed marginal cells, and strongly serrate costae that may end in distinct spines are all features of *Hookeriopsis* sensu lato. The long, pluripapillose leaf cells of this species place it in *Hypnella*. *Hypnella* and *Hookeriopsis* sensu lato are closely related, as demonstrated by several shared features. For example, leaves of *Hypnella pilifera* (Hook. & Wils.) A. Jaeger occasionally have weakly spined costae, and the marginal cells of *Hypnella leptorrhyncha* (Hook. & Grev.) A. Jaeger frequently have projecting ends. *Hypnella ambrosia* is close to *H. pilifera* (Hook & Wils.) A. Jaeger. The latter species has oblong leaves, often wider above the middle, that are abruptly narrowed to the acumen. Although the lower marginal leaf cells in *H. pilifera* are long and narrow, the marginal cells in the upper one-third can be short and broad. There are now seven species in *Hypnella* (Crosby et al., 1985; Allen, 1986; Buck, 1990). They are separated in the following key.

KEY TO THE SPECIES OF *HYPNELLA*

1. Leaves long acuminate, subpiliferous or piliferous 2
1. Leaves long-acute, subacute or obtuse 4
2(1). Leaves rounded at the apex, abruptly piliferous ..... *H. pilifer* (Hook. & Wils.) A. Jaeger
2. Leaves gradually and evenly long acuminate to a piliferous apex 3
3(2). Marginal leaf cells long, narrowly fusiform; costae smooth above, not or very weakly projecting by a single cell .... *H. leptorrhyncha* (Hook. & Grev.) A. Jaeger
3. Marginal leaf cells short, broadly rectangular; costae serrate above, strongly projecting by two or more cells .... *H. ambrosia* M. Lewis & B. Allen
4(1). Leaves ecostate; leaf cells all papillose or entirely to partly smooth ....*H. guayanensis* B. Allen & Buck in Buck
4. Leaves costate; nearly all leaf cells papillose 5
5(4). Leaves long-acute, apex serrate by projecting cell wall ends, ± bordered by long narrow ± smooth cells ..... *H. punctata* Broth.
5. Leaves subacute or obtuse, apex serrulate due to lateral, projecting papillae, not bordered ... 6
6(5). Leaf papillae mostly multifid; leaves obtuse, not apiculate, 0.5–1.0 × 0.2–0.4 mm; monoicous; exostome furrowed; capsule neck tubercular to scabrous .... *H. pallescens* (Hook.) A. Jaeger
6. Leaf papillae simple; leaves subacute, apiculate, 1.0–1.2 × 0.3–0.6 mm; dioicous; exostome not furrowed; capsule neck papillose ..... *H. diversifolia* (Mitt.) A. Jaeger

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